

REMARKS

Claims 1-4 were examined and reported in the Office Action. Claims 1-4 are rejected. Claims 2 and 3 are canceled. Claims 1 and 4 are amended. Claims 1 and 4 remain.

Applicants request reconsideration of the application in view of the following remarks.

I. 35 U.S.C. §103(a)

A. It is asserted in the Office Action that claim 1 is rejected under 35 U.S.C. §103(a) as being unpatentable over U. S. Patent No. 6,215,187 issued to Ooto et al. ("Ooto") in view of U. S. Patent No. 6,355,521 issued to Cho ("Cho"). Applicant respectfully traverses the aforementioned rejections for the following reasons.

According to MPEP §2142 "[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." (*In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). Further, according to MPEP §2143.03, "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (*In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974))." "*All words in a claim must be considered* in judging the patentability of that claim against the prior art." (*In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), emphasis added.)

Applicant's amended claim 1 contains the limitations of "[a] method of fabricating a capacitor for a semiconductor device, comprising the steps of: a) forming a

sacrificial layer in the height of the capacitor on a substrate, wherein an etch rate of an upper portion of the sacrificial layer is lower than that of a lower portion of the sacrificial layer, wherein the sacrificial layer is a TEOS layer and the sacrificial layer is formed in response to a RF power, an O₂ flow, and a spacing between the substrate and the shower head, and the lower portion of the sacrificial layer has a higher wet etching rate than the upper portion of the sacrificial layer does; b) forming a trench by selectively eliminating the sacrificial layer by a wet etch process; c) forming a bottom electrode in the trench; d) eliminating the sacrificial layer; e) forming a dielectric thin film on the bottom electrode; and f) forming the top electrode on the dielectric thin film.”

Ooto discloses changing the isotropic wet etch rate of the interlayer oxide film by controlling the amount of impurities, such as boron and phosphorous, in the interlayer oxide film (See Ooto, column 10, lines 44-53). Distinguishable, Applicant’s claimed invention controls the etch ratio of the sacrificial layer by varying the process condition, such as a RF power, an O₂ flow, and a spacing between the substrate and the shower head. Ooto does not teach, disclose or suggest controlling the etch ratio of the sacrificial layer by varying the process condition such as a RF power, an O₂ flow, and a spacing between the substrate and the shower head.

Cho discloses that the sacrifice oxide film is formed in a single layer (See Cho, column 3, lines 12-16). Distinguishable, the sacrificial layer in Applicant’s claimed invention includes two layers, i.e., a first TEOS layer and a second TEOS layer, which form the trench having an upper part thereof narrower than that of the lower part (See Applicant’s specification, page 9, lines 3-14, page 10, lines 1-4).

Therefore, even if the teachings of Ooto were combined with that of Cho, the resulting invention would still not contain all of the limitations of Applicant’s amended claim 1. Since neither Ooto, Cho, nor the combination of the two disclose, teach or suggest all the limitations contained in Applicant’s claim 1, as listed above, there would not be any motivation to arrive at Applicant’s claimed invention. Thus, Applicant’s

claim 1 is not obvious over Ooto in view of Cho since a *prima facie* case of obviousness has not been met under MPEP §2142.

Accordingly, withdrawal of the 35 U.S.C. §103(a) rejection for claim 1 is respectfully requested.

B. It is asserted in the Office Action that claims 3-4 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ooto and Cho, in view U. S. Patent No. 5,546,312 issued to Mozumder et al. ("Mozumder"). Applicant respectfully traverses the aforementioned rejections for the following reasons.

Applicant's claim 3 is canceled. Applicant's amended claim 4 directly depends on amended claim 1. As asserted above in section I(A), neither Ooto, Cho nor the combination of the two teach, disclose or suggest all of the limitations contained in Applicant's amended claim 1.

Mozumder discloses a monitor wafer controller capable of testing a process for TEOS based plasma-enhanced CVD. The monitor wafer controller of the Mozumder controls the gas pressure, RF power, wafer temperature, shower head to wafer spacing, TEOS flow, oxygen flow and susceptor temperature so as to control the deposition rate a number of thickness non-uniformity metrics, 10% HF etch rate, stress, density and mass (see Mozumder, column 4, lines 18-35). That is, Mozumder does not teach, disclose or suggest controlling the etch ratio of the sacrificial layer by varying the process condition, such as a RF power, an O₂ flow, and a spacing between the substrate and the shower head.

Therefore, even if the teachings of Ooto and Cho were combined with that of Mazumder, the resulting invention would still not contain all of the limitations of Applicant's amended claim 1. Since neither Ooto, Cho, Mazumder, nor the combination of the three disclose, teach or suggest all the limitations contained in Applicant's claim 1, as listed above, there would not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's claim 1 is not obvious over Ooto in view of Cho and further in view of Mazumder since a *prima facie* case of obviousness has not been met

under MPEP §2142. Additionally, the claim that directly depends on amended claim 1, namely claim 4, also would also not be obvious over Ooto in view of Cho and further in view of Mazumder for the same reason.

Accordingly, withdrawal of the 35 U.S.C. §103(a) rejections for claims 3-4 are respectfully requested.

CONCLUSION

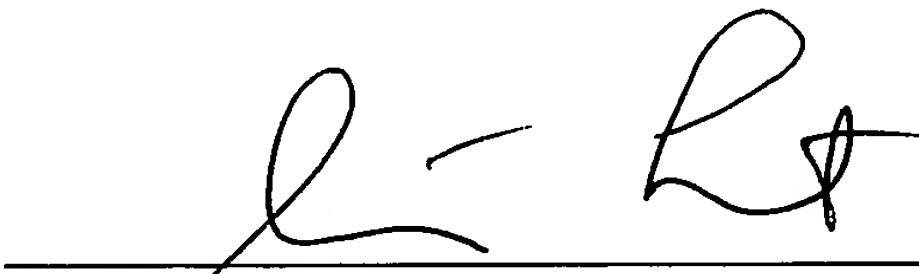
In view of the foregoing, it is believed that all claims now pending, namely 1, and 4, patentably define the subject invention over the prior art of record and are in condition for allowance and such action is earnestly solicited at the earliest possible date.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,

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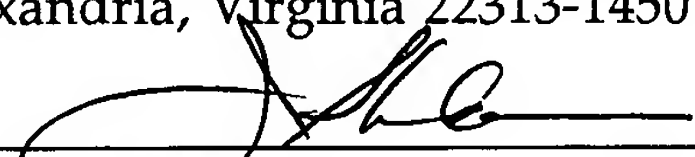
Dated: September 17, 2004

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